

Calterm III for AEs

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Courtesy: Lectora training material w/ modifications



What can you do with Calterm III?

What functions do you think can be performed using Calterm III?



- Perform Installation Quality Assurance testing
- Perform DPF regeneration
- View active and inactive fault codes
- Troubleshoot integration issues
- Troubleshoot calibration issues
- Collect engine/AT test data

All of these statements are TRUE!

Introduction

- Calterm: <u>Cal</u>ibration <u>Terminal</u>
- Caterm is an engineering development and testing tool used to moniter Electronic Control Module (ECM) for Cummins engine system and to alter the calibration data contained therein.
- It can be used to:
 - monitor ECM or any J1939/Datalink device parameters
 - temporarily change calibrations
 - view and erase fault codes
 - log ECM and J1939/Datalink parameters



Calterm Levels and Security

Field Calterm

- Standard: Calibration Upload, Compare, Data Monitor, Document, Erase Faults, Hold/Cancel Changes, IDL on Secure Modules, Logging, Request/release Change lock, Stop/Start Broadcast, Decimal/Hex/Binary View
- Selectable: Ability to ignore range Limits, Download to Secure Modules

Engineering Calterm

- Standard : Field Calterm (Full) Plus: Assemble, Blok/Unblock selected fault codes, Change Run Location, Divide, Edit, Export, Overlay, Save changes, Unlock Diagnostics, View He/Module Editor
- Selectable: CRC, Send Operations, Speed Upload, Speed Download, Unlock

Protected Calterm

Only works with protected engineering config file that provides limit access to engineering parameters

When to use Calterm III and not Insite[™]?

There are several instances when Calterm III is a preferred tool over Insite[™]:

-Calterm III allows the user to access additional parameters in the ECM

-Calterm III can log data at a faster rate

-Calterm III allows user to temporary change calibrations and override parameters during testing



Objectives

- Tool Installation and Registration
- Connecting to an Engine
- Monitoring and Logging
- Changing Calibrations and Overrides



- Connecting to an Engine
- Monitoring and Logging
- Changing Calibrations and Overrides



Field Engineering Calterm III installation and registration process consists of 4 main steps.

1. Install or Upgrade Calterm III	2. Submit Calterm III Request and Get Approval	3. Complete Tool Activation	4. Renew license annually
 Order Calterm III from software shelf Download installation file Install Calterm III 	 Run Calterm III Create CaltermRequest.xml file Fill out and Submit the Calterm III Order Form for PowerSweep 3 	 Upon approval, a license will automatically be generated and e-mailed to you Follow the directions in the license e-mail to apply the Calterm III license to the installation 	 To renew your Calterm III license repeat steps two and three
Calterm III insta on Calterm Eng	allation files and ins ineering Wiki webp	tallation instructions	s are located



	Caberra II - Information	
Constant Training COD Social COD Social Cod Maliane	CatemRequest xell file is created on your Desktop. How To Activate: 1. Laurich the Calibration Tools Older Form database in Latus Notes. 2. Olde on Create New Request. 3. Fill out the requested information. 4. Attach CatemRequest and from your Desktop. 3. Submit your request. 6. What to receive your license via email. 7. Place your license on your Desktop.	
	OK	
Citemitee		

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 Request Calterm III software from the Software Shelf ("Calterm v3.4.0 or above") only for the first installation

1. Install or Upgrade

Calterm III

- Wait until Calterm III link appears on your Desktop
- Download and install latest installation file form Calterm III Website
- Create CaltermRequest.xml file by running Calterm III program



2. Submit Calterm III Request and Get Approval

📝 Submit 💊 Save As Draft 🛛 😹 Close

orten.		CALTERM III ORDEI	R FORM
Serial Number :	Not Assigned	Status :	
Step 1: Identify Yourself Name : * Department : * Country : * Affiliation with	Alona Pehrson ^{IP} DBU ENGINEERING	In the form, click on each button and select your Country your Cffiliation with Cummins (your role) your Manager's Name. You managers contact will be automatically populated in this filed	මුcummins.com ු ston, Cummins
Cummins : • Manager's Name :		* Manager's Email Address : *Manager's Phone Number :	_

- Follow the link to Notes Order Form for PowerSweep3 database
- Fill out Calterm III Order Form
 - Make sure to select Field Engineering and <u>ALL</u> "Selectable Features"
 - Attach CaltermRequest.xml file and Submit Form for approval



	Calterm to: Sent by: Agent Notification	09/19/2011 10:17 PM Show Detail
four installation fyou have que	n of Calterm III has been approved for activation or extension. Follow the instruction stions or issues activating your installation, use the contacts listed below.	is below for completing the activation.
lere is the lice	nse file for your installation of Calterm III.	
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	00_CALTERMLicense.lic	
Calterm III seria	al number:010004700	
ixe 🚰 Cali	term III - Information	×
	A Caltern License was found on your Desktop. Do you want file? File Name:010004700_CALTERMLicense.lic Created:9/19/2011 9:51 PM	Calterm to apply this license
Red Fyc nai Cor	Yes No	-1
Calterm III v	website http://www.ctg.cummins.com/8005/display/Calterm/Calterm	
Calterm III	Activation Team at 1-812-350-8350	

3. Complete Tool Activation

- Upon full approval, a license will automatically be generated and emailed to you
- Follow the directions in the license e-mail
- Apply the Calterm III license to complete the installation



Cummins C Calterm III - Information x - • • × File Edit CaltermRequest xml file is created on your Desktop. **i**) How To Upgrade: 1. Launch the Calibration Tools Order Form database in Lotus Notes. 2. Click on Create New Request. 3. Fill out the requested information. 4. Attach CaltermRequest xml from you Desktop 5. Submit your request. 6. Wait to receive your license via email. Place your license on your Desktop. OK OK Cancel

 To prepare for license renewal Select Tools-> Options from the main menu

4. Renew license

annually

- Under Security Options click "Create Calterm Request file"
- New CaltermRequest.xml will be created on your Desktop
- Fill out a <u>NEW</u> Order Form and complete approval process as described in steps 2

and 3



Tool Installation and Registration - Summary

When installing and registering your Calterm III tool, remember to:

- Request the software from the Software Shelf on initial installation
- Fill out a new Calterm III Order Form properly to ensure it goes through approval process quickly
- Start the renewal process few weeks before your license expires
- Upgrade to the latest version of Calterm III to take advantage of new features and bug fixes





Connecting to an Engine

- Monitoring and Logging
- Changing Calibrations and Overrides



Things You Need

- Laptop with Calterm III installed and activated
- Datalink Adaptor and device driver

Datalink Adaptor Wiring Harness

ECM Configuration File



Datalink Adapter

- Datalink adapter is a device that allows communication between a laptop computer and an ECM over engine datalink
- There are several types of datalink adapters available
- Install device drivers for all adapters you plan to use

Ada	apter	PC Interface	Datalink Type
Inline 6	Complement and by Mith & Standard Comple	Serial/USB	J1939/J1708
PEAK		USB	J1939
Inline 5		Serial/USB	J1939/J1708
USB-Link™		USB/Bluetooth	J1939/J1708
Inline 2		Serial	J1939/J1708
Inline 1	8	Serial	J1587
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Datalink Adaptor Wiring Harness

- Using INLINE adapter and cables, connect to the 6-pin or 9-pin Deutsch service connector (if available) or
- Connect to a 3 pin public J1939 connector using mini backbone and adapter harness (can be purchased separately)
- To connect to a standalone ECM, use bench calibration harness with a power supply







Engine Connection Example

 List of 3-pin Deutsch adapter harness part numbers are available on QuickServe[™] Online



- Datalink adapter cable
- 2. Power supply
 - Gender changer cable
- 4. Mini-backbone
- 5. Engine harness 3-pin connector



Bench Top Connection Example

 List of bench top harness part numbers are available on the Incal DVD or in the service Bulletin <u>3377791</u> on QuickServe[™] Online



- Bench calibration base harness
- 2. Power supply
- 3. Laptop
- Data link adapter and cables
- 5. ECM adapter harness



Software Configuration File

- Software configuration file is a text file that defines engine parameters, their scaling and location inside the ECM memory
- There are two types of software configuration files:
 - .e2m (Core 1 products e.g EPA 2004 and below), and
 - .ecfg (Core 2 products e.g Above EPA 2007)
- Each version of software has a unique configuration file
- The version of configuration file <u>MUST</u> match software version in the ECM
- When in doubt obtain configuration file from batch file download process or download from the below location.
 - fngroup_ctc(\\CIDCSDFS01\EBU_Data01\$\NACTGx)\Service_CT_Config_Calter m_Configuration_Files

Software Configuration File

There are two ways to find the version of Software Configuration File inside the ECM

- Use the calibration software phase found in Insite[™], system ID and ECM data plate (hexadecimal notation), or
- Pick what you think is the correct file and verify once you are connected (decimal notation)

Disconnect from	Features and Parameters	ECM Value
- ECM	□ QSB4.5/5.9/6.7 - CM850	
.00_		
Fault Codes		
	Calibration Information	
Data Data Monitor/Logger	Calibration Software Phase	0E010010
1000	🚴 Calibration Time/Date Stamp	010285140246
ECM Diagnostic Tests	🚽 🚵 DO Option	91847
	ECM Code	Z90869.3B
Advanced ECM	- 🚵 Other Options	
	SC Option	9481
Features and	E Customer Information	
Parameters	ECM Information	

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00	Combustion_Control_Path_Owne Accelerator_Pedal_Position	Product Information	Company Company	
00 00	Oil_Pressure Intake_Manifold_Temperature	Product_Id-Selected	E2I	
00	Coolant_Temperature ProstLoadAtCuripdIndicated	Product_Id-Actual	E2I {	15
00	CAIP_Accelerator_Deadband CAIP_Accelerator_Hysterisis	Config File	5257022.01.ecfg	
00	CASP_Auto_Zero_Offset CACD_Test_Cell_Auto_Zero	Config Date/Ver.	14.1.0.16	
00	T_Ind_Auto_Zero_Disable C_APP_Highest_Accelerator_Him	Cal Date/Ver	141016	-
	Con June 1994	DLA Firmware	4.4	
Summer Las	tente Mélo - II	DLA Driver Version	2.49.8-45	Ē
volut_14	Advented F21	BootLoader Version	4.7.1.2	
config tals	5257022.01.ecfg s/Wee, 14.1.5.16	Run Location	Application 2	
al Dete/V	Produle Ner 14.1.0.15	ECM Part Number	4921776	
X.A Deteor	Version 2,45,8-45	ECM Serial Number	32067446	-
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A Driver toolLoade lan Localis CM Part N CM Serial Aart BootLo red BootLo	Version 2,45,8-45 r Version 4,7,3,3 on Application bandser 4323,75 Number 3260,746 Londer Version 4,8,8,3 aufer Version 4,8,8,9	Start BootLoader Vers	52007440 rsion 4.6.0.1 ion 4.9.9.9 for 4.9.9.9	



Software Configuration File

- Software configuration files may be obtained through the batch file download process
- Along with software configuration files for different engine platforms the download contains cross reference between software phase and configuration file part number
- For more information on how to request access and use the tool go to GCE DBU website



Peak into a Configuration file

<?xml version="1.0" encoding="UTF-8" ?>

<Engineering_Tool_Config_File version="7.70.0.43" description="Core-II Software Copyright 2013 Cummins Inc. - Cummins Confidential - HDCPS-X10-OBD-C25.37.00.00-</p> ISX-7.70.0.43 00" crc="F796" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:rule="http://www.electronics.cummins.com/rule/I" xsi:schemaLocation="http://www.electronics.cummins.com/eti/I/vob/eti/gtis/xml_schema/gtis_xml_schema_I.xsd@@/main/12" xmlns="http://www.electronics.cummins.com/eti/I"> - <compatibility_header> <calibration version>7.70.0.43</calibration version> <module name>CM22xx</module name> <first_prod_cfg_file_version>2003.1.1.0</first_prod_cfg_file_version> cproduct id>BBZ</product id> <module_part_number>99999999</module_part_number> <interface_level>4.5.6.0</interface_level> <creation_date>2013-03-12</creation_date> <start_boot_loader_version>2.0.0.5</start_boot_loader_version> <end boot loader version>2.0.1.5/end boot loader version> <byte order>BigEndian</byte order> <index_table_address>00042000</index_table_address> <file_descriptor>Core-II Software Copyright 2013 Cummins Inc. - Cummins Confidential - HDCPS-X10-OBD-C25.37.00.00-ISX-7.70.0.43_00</file_descriptor> </compatibility header> - <parameter name="C_ATR_trc_MissionRegenDocOutThd"> <id>44790</id> <!-- 0x0000AEF6 --> <description>Doc Out Tmptr must be above this level for a mission regen to occur</description> <release status>Not Released</release status> - <data_type xsi:type="Floating_Point"> <engr units>Deg C</engr units> <engr_min>-80.0</engr_min>

<engr_units>Deg_C</engr_units>
<engr_min>-80.0</engr_min>
<engr_max>1700.0</engr_max>
<min_resolution>0.1</min_resolution>
<data_length>4</data_length>
</data_type>
<accessible_by_id>true</accessible_by_id>
<group_ids>331</group_ids>
- <offline_accessible>
<subfile>6</subfile>
<itn>0000AEF6</itn>
</offline_accessible>

</parameter>



What You Need - Summary

Before traveling to a customer site to perform testing or collect engine data, remember to:

- Check the version of your Calterm III is up to date and license did not expire
- Look for correct software configuration files for the engine you plan to work with
- Verify the device drivers are installed for your datalink adapter



- Inline
 (http://inline.cummins.com/downloads/i5driver.html)
- Peak

(http://www.peak-system.com/Support.55.0.html?&L=1)

 Bring necessary wiring harness to make your connection



Starting a Connection

- To start a connection from the File Menu bar select Open Module
- Specify Product settings and Datalink settings in the Select Module window (default setting will have open this window on Calterm III start)



Product Connection Settings

ngineering Name	Marketing Name	ID	Hardware Na	SPEED Support	
CEC B/C	DCEC B/C	BCP	CM2150C	Available	
EF Doser	DNOX2.2	DSR	DCU	Available	
elta	QSM11	DEI	CM570	Available	
elta ISM99	ISM	DEL	CM570	Available	=
agle Black	Eagle Black	BAB	CM876	Available	-
agle Red	Eagle Red	BAC	CM871	Available	
cho	ISBe	ECH	CM800	Available	
cho 2	ISB - CM850	EC2	CM850	Available	
CORE - MidRange	QSB3.9/4.5/5.9/QS	ENI	CM550/CM554	Available	
nforcer	Signature/ISX - CM8	ENF	CM870	Available	
ngineering Development		ABC		Not Available	
ngineering Development		LBNG		Not Available	
bic Ind/Echo 2 Marine	QSB5.9 - CM850	E2I	CM850	Available	
guinox Brazil	ISBe 4.5/6.7L Euro5	BEI	CM2150E	Available	
uro 3 B (China)	ISBe - CM2100MD	BAH	CM2100MD	Available	-
2105	E 0.0000.000	DDIZ.	CHOODO.	A -1 1 1	
12 C		11			P

- On the Products tab Select the product you want to connect to. (The list can be sorted by any of the columns by clicking on the heading.)
- Browse and Choose the correct Configuration File
- Click Open
- Selected file path will appear



Datalink Connections Settings

Connection S	ettings				
Protocol:	J1939	-	Vendor List: Cummins, Inc.	-	
Adapter:	RP1210a	-	Devices:		
CAN Speed:	250 kbps	¥	DeviceID=90, US	SB,INLINE5 U 🔻	
Port	COM1	-			
Advanced — F Block Tr	ansfer Mode	J193	9 Tool Address	0xFA 💌	
AutoStop Broadcast Auto Reconnect		✓ Query Run Location Max Pending Requests 8		8 💌	

- Click on the Datalink tab.
- Select your Datalink Adaptor
 - Inline 4/5/6: use RP1210a
 - Peak: use Peak_Systems
- Select which port on your PC the Adaptor is connected to in the Devices drop-down.
 - Serial: use COM
 - USB: USB
- Click on Automatic



Configuring a Connection - Summary

When configuring engine connection, remember to:

- Specify the correct product type
- Select and verify software configuration file version matched software version in the ECM
- Select the datalink adapter you are using from the list
- Select the correct connection port





Calterm III Window

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Calterm III Window – Menu Bar

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Addr	Name		Value	_				Unit	Comm		
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Cal File		Module	13/05/2011 13:17	Added parameter: C CNK	ExitRPM from Device Addre	ss 0x00				00:0319	
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DLA Driver	Version	1.0/2.0	13/05/2011 13:17	Added parameter: _ECM_	Code from Device Address 0x	c00				00:1241	
BootLoade	r Version	2.0.0.9	13/05/2011 13:17	Added parameter: GHC_SI	tate from Device Address Ox	00				00:1242	
Run Locati	on	Application	13/05/2011 13:17	Added parameter: Filtered	_Gear_Ratio from Device Ad	ldress 0x00				00:1711	
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Calterm III Window – Tool Bar

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File Edit	View Edi	tor Logging Cor	nmands Calibration T		
Save Sto	p Start (Configure IDL Start I	DL Cancel IDL Reconn	at ECM Reset Datalink	
RP12	210a : J193	9			4 Þ ×
Scre	en 1 Sci	reen 2			4 Þ ×
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00	Decettor	dA+Curend	0 000		
00	Intake M	daticurspu Nanifold Temperat	-3 609	Course course the course out file 35.22 V This ma	
00	00 Boost Pressure 49.56			• Save – save the screen file	
00	Coolant	Temperature	85.914	1.000 None Scaler	
00	00 APC_hp_Cmd 1200.0		1200.0	Otore otore recercitor vice en al otor 5700.0 m Altitud	
00	00 APC_hp_Fdbk 1200.0		1200.0	 STOD — STOD MONITORING GATA 1 None Indicat 	
00	Accelera	tor_Pedal_Position	0.000	0 None Status	
00	00 Vehicle_Speed 0.00		0.00	1 None Status	
00	Net_Eng	ine_Torque	-203.000	 Start – start logging data 	
00	Oil_Press	sure	482.66	GHC_SETUP This pa	
00	Engn_Co	ntrol_Path_Owner	58	None This value indicat 00 _ECM_Code X0325L.00 Data pl	
00	Charge_I	Flow	0.000	kg/mi Charge_Flow virt	
00	CBP_Con	nbustion_lorque	-203	N_m Engine lorque fr 00 T_LSJ_Breakpoint_Speed 700.0 RPM Low S	
Product Inf	formation	Addr 00 -	Event Log		Faults
Product_Id	l-Selected	BBY	Date	Description	00:0123 00:2311
Product_Id	-Actual	BBX	13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00	00:0132 00:2771
Config File		Core_II_ICD.	13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00	00:0155 00:3143
Config Date	e/Ver.	8.3.1.3	13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00	00:0222 00:3147
Cal File		Module	13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00	00:0319
Cal Date/Ver 8.3.1.3 13/05/2011 13:1			13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00	00:0451
DLA Firmw	are	5.45	13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00	00:1117
Bootloade	version	2009	13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00	00:1242
Run Locati	00	Application	13/05/2011 13:17	Added parameter: GHC_state from Device Address 0x00	00:1668
ECM Part N	lumber	4995445 -	13/05/2011 13:1/	Added parameter: Filtered_Gear_Katio from Device Address 0x00	00:2182

< III.

EN 🔺 📋 .atl 🐚

Event #: 0

00 29 30 FF 00:RP1210a:J1939

13/05/2011

F10 - Function key list

4

🖋 📵 Idle

X

Logging: OFF

Calterm III Window – Monitor Screen

Image: Control_State None Comment Indicates to the t 00 Control_State Value Value <th>ve Stop</th> <th>Start Configure IDL Start IDL Ca</th> <th>ncel IDL Reconned</th> <th>t ECM</th> <th>Reset Datalink</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	ve Stop	Start Configure IDL Start IDL Ca	ncel IDL Reconned	t ECM	Reset Datalink							
With Terrandeters.cc.runt Name Screen 1 Mode Request/Receive Date 0 Image: Control_State Open indicates to the to the control of the control	- C											
Name	ilonamo	General Name Ca	aan 1					Mada Dea	the second s	· · · /	20	
Turne Turne <thturne< th=""> <thturne< th=""> <thtu< th=""><th>Addr</th><th>Parameters.scr.xml Name</th><th>Value</th><th>Unit</th><th>Comment</th><th></th><th>Addr</th><th>Name</th><th>Value</th><th>Unit</th><th>Comm</th><th>1</th></thtu<></thturne<></thturne<>	Addr	Parameters.scr.xml Name	Value	Unit	Comment		Addr	Name	Value	Unit	Comm	1
00 combustenc.com/p.Path_Owner 26 None Indiaces the ID 00 indiace_Manifold_remperature 3.609 bgC The ratio of the combustion_fores 47.63 drg B TV/Lip 00 indiace_Manifold_remperature 3.609 bgC The metric of the indicates the ID 00 Ambient_Air_Press 47.63 drg B TV/Lip 00 indicate_Manifold_remperature 3.609 bgC The metric of the indicates the ID 00 Ambient_Air_Press 47.63 drg B TV/Lip DispC Trestion of the DispC Dis	00	Fueling Control State	FUELING STOP	onic	Indicates to the t		00	Total Fueling	0.00	mg/str	Desire	
00 ProttloadACurysd 0.000 % the ratio of the c 01 Intake_Manifold_Temperature 3.669 Deg_C The linearized an 02 Coolint_Temperature 85.514 Deg_C The linearized an 02 APC_hg_Fidbi 1200.0 bar Accumperson 1.000 None Solar 03 APC_hg_Fidbi 1200.0 bar Accumperson 1.000 None Solar 04 APC_hg_Fidbi 1200.0 bar Accumperson 1.000 None Solar 04 APC_hg_Fidbi 1200.0 bar Accumperson 1.000 None Solar 04 APC_hg_Fidbi 1200.0 bar Accumperson 1.000 None Solar 05 Apc_hg_fidbi 1200.0 bar Accumperson 1.000 None Solar 00 H_LEgigle_Torque -203.000 N_m Actual engine torque for 0.000 Kef_State Git Sette Git Sette <td>00</td> <td>Combustion Control Path Owner</td> <td>26</td> <td>None</td> <td>Indicates the ID</td> <td></td> <td>00</td> <td>Final Timing</td> <td>6.69</td> <td>deg B</td> <td>[TVC]</td> <td></td>	00	Combustion Control Path Owner	26	None	Indicates the ID		00	Final Timing	6.69	deg B	[TVC]	
00 Intake_Passure 3609 Deg_C The linearized an 00 Goolant_Temperature 4956 KPa_G Gage value of In 00 APC_hp_Cnd 1200.0 bar Accumpress and 00 AHttude 5700.0 m Attude 00 APC_hp_Cnd 1200.0 bar Accumpress and 00 AHttude 5700.0 m Attude 00 APC_hp_Cnd 1200.0 bar Accumpress and 00 AHttude 5700.0 m Attude 00 APC_hp_Cnd 1200.0 bar Accumpress and 00 AHttude 5700.0 m Attude 00 Hitzergine_Torque 203.00 N_m Actual engine tor 00 Filtered_Gear_Ratio 16.00000 None Filtered_Gear_Ratio 100.0 700.0	00	PrentLoadAtCurSpd	0.000	%	The ratio of the c		00	Ambient_Air_Press	47.63	kPa	Value	
00 Boost, Pressure 49.56 KPa_G Gage value of Im 00 InternalTmptr 23.55 Deg_C Internal 00 APC_hp_Cmd 1200.0 bar Accumpress cmd 00 Altitude 1000 none Status 00 APC_hp_Cmd 1200.0 bar Accumpress cmd 00 Altitude 1000 none Status 00 APC_sp_fdtk 1000.00 kn/hr This parameters 00 APC_sp_fatk_Lamp 1 None Status 00 Net_Engine_Torque 203.000 N.m Accumpress mediate 00 Effectd_Gage.Ratio 64.55FUP This parameters 00 Glassing=Torque 203.000 N.m Accumpress mediate 00 Effectd_Gage.Ratio 64.55FUP This parameters 00 GLassing=Torque 203 N.m EngineTorque file 00 Filered.Gage.Ratio 64.55FUP This parameters 00 CBP_Combustion_Torque 203 N.m EngineTorque file 00 File 700.0 RPH Value Monitor Screeens: These screeens contain the parameters t	00	Intake_Manifold_Temperature	-3.609	Deg_C	The linearized an		00	Battery_Voltage	25.22	v	This pa	
00 Coolant_Temperature 85.914 Deg_C The linearced an and a compress cmd Alktude 1.000 None Scaler 00 APC_bp_Cndd 1200.0 bar Accumpters cmd Alktude 5700.0 m Alktude 00 APC_bp_Cndd 000 kn/ht bar Accumpters cmd Accumpters cmd Accumpters cmd Accumpters cmd Accumpters cmd Indicat 00 APC_bp_Cndd 000 kn/ht bar Accumpters cmd Accumpters cmd Indicat 00 Accelerator_Fedul_Position 0.000 kn/ht Minstrameters 00 Minitteance_fedul_Lamp 1 None Status 00 Hel_Engine_Torque -203.000 N.m Actual engine torque 1.000 Kn/ht None Status 00 Eng_Control_Path_Owner 58 None None The value Indicat None Status Indicat None Status 00 Elge_State GHC_State GHC_State GHC_State GHC_State Indicat Indicat Indicat Indicat Indicat	00	Boost_Pressure	49.56	kPa_G	Gage value of lin		00	InternalTmptr	23.555	Deg_C	Intern	
00 APC_bp_cndd 1200.0 bar Accumpress and bar 00 Aktide 5700.0 m Aktide 00 Acceptable 100.0 bar Accumpress and bar 00 Aktide 5700.0 m Aktide 00 Acceptable 1 0000 Apc_s_maposition 1 None Status 00 Nettode Special 1 None Status None Status 00 Nettode Spop_falk_Lamp 1 None Status None Status 00 Net_spine_Torque -203.000 N_m Actual engine tor 00 Stop_falk_Lamp 1 None Status 00 Ret_spine_Torque -203.000 N_m Attade for First-o Fi	00	Coolant_Temperature	85.914	Deg_C	The linearized an		00	H_CBR_Chi_Value	1.000	None	Scaler	
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uvu Accelerator, preda_poston 0.000 % Provides a measu 0 Maintenance_Failt_Lamp 0 None Status 00 Vehicle_Speed 0000 N/m Kinsparameters 00 None Status 00 Net_Engine_Torque -203.000 N_m Accual engine tor 00 Filtered_Gear_Ratio 16.00000 None Status 00 Eng.control_Path_owner 58 None None Filtered_Gear_Ratio 16.00000 None Filtered_Gear_Ratio None Filtered_Gear_Ratio None Filtered_Gear_Ratio None Filtered_Gear_Ratio None Filtered_Gear_Ratio None Filtered_Gear_Ratio <td< td=""><td>00</td><td>APC_hp_Fdbk</td><td>1200.0</td><td>bar</td><td>Accumulator Pres</td><td></td><td>00</td><td>APC_s_ImaPosition</td><td>1</td><td>None</td><td>Indicat</td><td></td></td<>	00	APC_hp_Fdbk	1200.0	bar	Accumulator Pres		00	APC_s_ImaPosition	1	None	Indicat	
00 Vehicle_speed 0.00 kl/n/m file parameters 00 Net_Engine_Torque 203.000 N_m Actual engine tor 00 Old_Pressure 482.66 kPa_G The linearized an 00 Charge_How 0.000 Kd/m Filtered_Gase_Ratio GHC_State GHC_SETUP 00 CBP_Combustion_Torque 203 N_m Engine_Torque file 00 T_LSI_Breakpoint_Speed 700.0 RPH Low 5 00 CBP_Combustion_Torque 203 N_m Engine Torque fr 00 T_LSI_Breakpoint_Speed 700.0 RPH Low 5 00 CBP_Combustion_Torque 203 N_m Engine Torque fr 00 T_LSI_Previous_Idle 700.0 RPH Low 5 duct Id/Selected BBV Descention T_use 00 T_LSI_Previous_Idle 700.0 RPH Low 5 Monitor Screeens: These screeens contain the parameters that are currently Descention Descention 00 Low 5 00.0123 00.023 being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed	00	Accelerator_Pedal_Position	0.000	%	Provides a measu		00	Maintenance_Fault_Lamp	0	None	Status	
00 01 Pressure (Pressure 00 00 Pressure (Pressure 00 100 Pressure 00 100 Pressure 00 100 Pressure 00 100 Pressure 00 Pr	00	Vehicle_Speed	202.000	Km/nr	I his parameter s		00	Stop_Fault_Lamp	1	None	Status	
0 0	00	Oil Pressure	-203.000	kDa G	The linearized an		00	CHC State	CHC SETUP	None	This na	
Charge_Flow 0000 Ka/mi Charge_Flow 000 CBP_Combustion_Torque 203 N_m Engine Torque fr 00 T_LST_Previous_Idle 700.0 RPM Low 5 Combustion_Torque 203 CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_Combustion_Torque CBP_COMBUSTION_TO	00	Engn Control Path Owner	58	None	This value indicat		00	ECM Code	X0325L00		Data pl	
00 CBP_Combustion_Torque -203 N_m Engine Torque fr 00 T_LSI_Breakpoint_Speed 700.0 RPM Low 5 duct information Addr 00 Event Log 00.0123 00.22 00.20 Monitor Screens: These screens contain the parameters that are currently being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters. FI0-Function key let Event #.0 Event #.0 Event #.0 Event #.0 Event #.0 Event #.0 1338	00	Charge Flow	0.000	ka/mi	Charge Flow virt			_couc	XUSESE.UU		Data pi	
Monitor Screens: These screens contain the parameters that are currently being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr	161	00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S	
Much to Selected BBY Pate Precision Provide BBY Part of the second secon				-		-	00	T_LSI_Previous_Idle	700.0	RPM	Value	
Addr 00 Version Addr 00 Version Party 000123 0023 0023 0023 0023 0023 0023 00												
Monitor Screens: These screens contain the parameters that are currently being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	oduct Info	ormation Addr 00 🖵 Event I	Log									Faults
Monitor Screens: These screens contain the parameters that are currently being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	duct Id	Selected BBY	ta	Desc	ription							00:0123 00:
being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	N / c	nitor Soroon	o. Tho	~~	coroopo	oonto	hin t	the noramo	tore th	ot i	oro oi	irroptly
being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	IVIC		5. INC	26	Screens		111 I	ne parame		al	are ci	лтепшу
not two separate ones, they are displayed in this way to make it easier to see a number of parameters.								مىلەم، مەلە				
not two separate ones, they are displayed in this way to make it easier to see a number of parameters.	De	ing monitored	d (or ic)qq	ea). vvn	en loc	ggin	ig they are i	oggeo	l as	sone	list,
not two separate ones, they are displayed in this way to make it easier to see a number of parameters.			,	00	, ,	`			.00		•.	· ´.
see a number of parameters.	no	t two separat	e ones	S. t	hev are	displa	vec	l in this way	' to ma	ake	e it eas	sier to
See a number of parameters.			-	-, •			,					
F10 - Function key list P @ Idle Logging: OFF Event #: 0 Image: Bit in the second seco	Se	e a number c	of nara	me	ters							
F10 - Function key list	00		puid									
F10+Function key list	F40 F									-		
	F10 - Fur	iction key list		9	🖉 🛑 Idle 🛛 🔴 Logi	ging: OFF				Event	#:0 0 29	30 00:RP1210a:J1
											EN	13:18

Calterm III Window – Product Information

Cummins Calterm III	- 0 - X -
File Edit View Editor Logging Commands Calibration Tools Help	
Image: State Image: State Image: State Image: State Image: State Image: State Save State State Configure IDL State Concel IDL Reconnect ECM Reset	
RP1210a : J1939	4 ⊳ ×
Screen 1 Screen 2	$\triangleleft \triangleright \times$
Filename General Parameters.scr.xml Name Screen 1 Note Request/Receive Desired 20 ms	180
Addr Name Val 00 _Fueling_Control_State FV 00 _Genbustion_Control_Path_Owner FV 00 Combustion_Control_Path_Owner FV 00 PrentLoadAtCurSpd 0.0 00 Intake_Manifold_Temperature 3.6 00 Boost_Pressure 49. 00 Coolant_Temperature 85. 00 APC_hp_Grid 120 00 Accelerator_Pedal_Position 0.0 00 Vehicle_Speed 0.0 00 Net_Engine_Torque 20 00 Charge_Flow 0.00 00 CBP_Combustion_Torque 20 00 CBP_Combustion_Torque 20	
Product Information Addr 00 vent Log Product_Id-Selected BBY Product_Id-Actual BBX Config File Core_II_ICD+ Config Date/Ver. 8.3.1.3 Cal File Module Cal File Module Cal File Module Date Date parameter: T_ISI_Incrt_Decrt_Select_En from Device Address 0x00 Date Display=transmitter: T_ISI_Incrt_Decrt_Select_En from Device Address 0x00 Cal File Module Cal File Module DLA Firmware 5.45 DLA Firmware 5.45 DLA Driver Version 1.0/2.0 BootLoader Version 1.0/2.0 BootLoader Version 2.0.0.9 Run Location Application ECM Part Number 4995445 V Added parameter: Ston Failt Tamp from Device Address 0x00 13/05/2011 13:17 Added parameter: GHC_State from Device Address 0x00 13/05/2011 13:17 Added parameter: GHC_State from Device Address 0x00 13/05/2011 13:17 Added parameter: GHC_State from Device Address 0x00 13/05/2011 13:17 Added parameter: Ston Fault Tamp from Devi	Faults 00:0123 00:2311 00:0132 00:2771 00:0154 00:2964 00:0155 00:3143 00:0222 00:3143 00:0418 00:0414 00:1117 00:1147 00:1241 00:1241 00:1242 00:1668 00:1711 00:2182 Image: Im

Calterm III Window – Event Log

省 Cummin	ns Calterm III	-	And in case of the local division of the loc	The owner watch	A Descent of	Company of	State of Sta		-			. 0 <mark>- X</mark>
File Edit	View Editor L	ogging C	ommands Calibration T	ools Help								
Save Sto	p Start Configur	e IDL Star	t IDL Cancel IDL Reconn	ect ECM Reset Datalink								
RP12	210a : J1939											4 Þ ×
Scre	een 1 Screen 2]										4 Þ ×
Filename	General Parameters scr	vml N	ame Screen 1				Mode Re	quest/Receive 🔻	Desired 20	ms 🔻		180
Addr	Name					20 ³ 6		_				
00	_Fueling_Contr	ol_Sta	Event Loc	i: displav	s the d	escrir	otion of ev	ents o	r			
00	Combustion_Co	ontrol							•			
00	PrentLoadAtCu	rSpd	nessages	s that hav	e occu	rred (during a C	alterm	n			
00	Boost Pressure	e I								f i i i i i i i i i i i i i i i i i i i		
00	Coolant_Tempe	eratur S	session.	he top o	f the ar	id dis	plays the	most				
00	APC_hp_Cmd											
00	APC_hp_Fdbk	dat p	ecent me	essages (durina t	he Ca	alterm III s	essior	ר	£		
00	Vehicle_Speed			gee g					-			
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00	Oil_Pressure											
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00	CBP Combustio	on Torque	-203	N m Engine Torque	fr -	00	T LSI Breakpoint Speed	700.0	RPM Low	s		
•						- 00	T_LSI_Previous_Idle	700.0	RPM Value			-
Product Int	formation Addr	00 -	Event Log							T	Faults	
Product_Id	d-Selected BBY	100 -	Date	Description						-	00:0123	00:2311
Product_Id	d-Actual BBX		13/05/2011 13:17	Added parameter: T_	LSI_Breakpoint_Spe	ed from Device	Address 0x00			=	00:0132	00:2771
Config File	Core	_II_ICD.	13/05/2011 13:17	Added parameter: T_	LSI_Incrt_Decrt_Se	lect_En from D	evice Address 0x00				00:0155	00:3143
Config Date	e/Ver. 8.3.1	.3	13/05/2011 13:17	Added parameter: T_	LSI_Idle_Speed_Sav	e_En from Dev	ice Address 0x00				00:0222	00:3147
	From 8.3.1	.3	13/05/2011 13:17	Added parameter: C_	CNK_ExitRPM from	Device Address	0x00				00:0418	
DLA Firmw	are 5.45		13/05/2011 13:17	Added parameter: 1_	LSI_Previous_Idle fr	om Device Add	Address 0x00				00:0451 00:1117	
DLA Driver	Version 1.0/2	2.0	13/05/2011 13:17	Added parameter: _E	CM_Code from Devic	e Address 0x0	0				00:1241	
BootLoade	r Version 2.0.0	.9	13/05/2011 13:17	Added parameter: GH	C_State from Device	Address 0x00					00:1242 00:1668	
Run Locati	on Appl	ication	13/05/2011 13:17	Added parameter: Fil	tered_Gear_Ratio fr	om Device Add	ress 0x00				00:1711	
	umber 4993	9445 •	↓ 13/05/2011 13·17 ↓	Added narameter: St	on Fault Lamn from	Device Addres	¢ NYNN			- C	 € 102 	•
🔐 F10 - Fu	inction key list			🖋 📵 Idle	Logging: OFF				Event #: 0	0 2	30 🖅 00:R	P1210a:J1939
								100		EN 👝 🙃) al de	13:18
											, am , 🔗	13/05/2011
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Calterm III Window - Faults



Calterm III Window – Status Bar

Gummins Ci File Edit Vi	Calterm III Fiew Editor Logging Command:	s Calibration Tools He	lp T	a Com				
Save Stop RP1210	Start Configure IDL Start IDL Ca	ancelIDL Reconnect ECM	Reset Datalink					4 Þ ×
Screen	1 Screen 2							4 Þ ×
Filename B	eneral Parameters.scr.xml Name Sci	reen 1			Mode	Request/Receive -	Desired 20 ms 💌	180
Addr 1 00 00 C 00 F 00 I	Name _Fueling_Control_State Combustion_Control_Path_Owner PrcntLoadAtCurSpd Intake_Manifold_Temperature Boost_Pressure	Value Unit _FUELING_STOP 26 26 None 0.000 % -3.609 Deg_C 49 56 kPa G	Comment Indicates to the t Indicates the ID The ratio of the c The linearized an Gane value of lin		ldr Name Total_Fueling Final_Timing Ambient_Air_Press Battery_Voltage InternalTontr	Value 0.00 6.69 47.63 25.22 23.555	Unit Comm mg/str Desire deg_B [TVC] kPa Value V This pa Deg. C. Intern	
00 S1	tatus Bar: Padlock – E Pen - The (permission	ECM Sec ChangeLo to make	urity Status ock Status i changes wi	(Se ndic thin	cure vs. Ur ates if the (the module	nsecure) Calterm e's mem) III tool ha lory locatio	ເຣ ons
rodu	Logging – (ON/green	vs. OFF/re	d.				111 71 64
ionfig ial Fik al Da MA Fi MA Di SootLi Sun Lo	Connection status. Whe icon is disp	i Status - en active layed.	This area d the icon bli	lispla nks (ays the moo green and v	dule cor when in	mmunicati active a S	ion Stop
C E10 5	iinn ken lint						Front # 0	
		3 🖽 🧹	Logging: OFF				Event #: U [00] [29]	atl 13:18 13/05/2011
4/	/12/2013	Cumm	ins Confidential					

Calterm III Window - Summary

When working in Calterm III remember to:

- Ensure Product ID selected matches product ID Actual in Production Information section
- Check the selected software configuration file version matches actual software version in the ECM
- Pay attention to the Event log for valuable tool feedback
- Reference status bar to ensure module connection is active





- Tool Installation and Registration
- Connecting to an Engine
- Monitoring and Logging
- Changing Calibrations and Overrides



In this section we will discuss how to

- Open an existing screen file
- Search and add new parameters
- Save a screen file
- Add graphical monitor screens
- Start logging data
- Save a data log



Opening a Screen File

Cummins Calterm III							• 🔀
File Edit View Editor Logging	Commands Calibratio	on Tools Help					
Stop Start Configure IDL Start ID	L Cancel IDL Reconne	ct ECM Reset Datalink	t				
Peak_Systems : J1939							$\triangleleft \triangleright \times$
Screen 0							4 Þ 🗙
Filename Primary_Ihrottle_Core 2 Tier3.scr.xml	Name Screen 0		Mode	Request/Receive Desired 20	ms 💌		120
Addr Name	Value	Unit	Add	Name	Value	Unit	
> 00 _ECM_Code	Z90869.04	8	▶ 00	T_ACD_Acctr_Type_Select	3	None	
00 Engine_Speed	0.0	RPM	00	Accel_Position_Sensor_Volts	0.000	v	
00 Combustion_Control_F	Path_Owne 26	None					
00 Accelerator_Pedal_Pos	sition 0.000	%	00	Primary_Accel_Ped_Pos	0.000	%	
00 Oil_Pressure	617.72	kPa_G	00	Accelerator_Auto_Zero	0.000	%	
00 Intake_Manifold_Tem	perature 68.328	Deg_C	00	Filtered_Raw_Accel_Value	0.00	counts	
00 Coolant_Temperature	95.617	Deg_C	00	Accel_Before_Error_Process	0.000	%	
00 PrcntLoadAtCurSpdInd	dicated 0.000	%				_	
00 Total Fueling	0.00	mg/str	- 00	On Idle Switch	0	None	•
Product Information Addr 00	✓ Event Log					Faults	
Product_Id-Selected E2I	Description				•	00:0323	
Product_Id-Actual E2I	Added param	eter: J39 Accelerate	or Pedal P	osition from Device Address 0x00		00:0324	
Config File 5257022.	01.ecfg Added param	eter: AIP AccPd Us	er Ovrd Va	l from Device Address 0x00		00:0332	
Config Date/Ver. 14.1.0.16	Added param	eter: T AIP Acceler	ator Ovrd	En from Device Address 0x00		00:0553	
Cal File Module	Added param	eter: Idle Validation	State from	n Device Address 0x00		00:0731	
Cal Date/Ver 14.1.0.16	Added param	eter: Off_Idle_Switc	h from Dev	ice Address 0x00		00:2311	
DLA Firmware 4.4	Added param	eter: On_Idle_Switc	h from Dev	ce Address 0x00			
DLA Driver Version 2.49.8-45	Added param	eter: Accel_Before_I	Error_Proc	ess from Device Address 0x00			
BootLoader Version 4.7.1.2	Added param	eter: Filtered_Raw_	Accel_Value	e from Device Address 0x00			
Run Location Application	on Added param	eter: Accelerator_A	to_Zero fr	om Device Address 0x00			
ECM Part Number 4921776	Added param	eter: Primary_Accel	Ped_Pos f	om Device Address 0x00			
ECM Serial Number 32067440	6 Invalid paran	neter H_APP_Before_	Auto_Zero	at address 00			
Start BootLoader Version 4.6.0.1	Added param	eter: Accel_Position	Sensor_Ve	lts from Device Address 0x00	-		
End BootLoader Version 4.9.9.9	•						
🔐 F10 - Function key list 🖉 📵 Idle	Logging: OFF			Event #	0 💿	00:Peak_	Systems:J

- Go to the Editor Menu to Open an existing screen file
- Select a Screen file you want to use and Click Open
- The parameters in the screen file will be added to the monitor



Adding ECM Parameters

- To add parameters to a screen file press the F1 Button to access Parameter Query
- Make sure "Display RAM parameters" is checked to view runtime variables
- Type the name of the parameter, or
- Enter a keyword to search the Parameter Name and Comments columns
- Select the parameter by checking the white boxes on the left
- Click Apply to add the selected parameters to the Monitor Screen.
- The variable will appear in the monitor window





Saving Screen File

e	Cummi	ns Calterm II	L									
Fil	e Edit	View Edi	tor Logging	Command	s Calibrat	ion Tools	Help					
St	op Re	Connect ECM	Reset Datalink	c								
/	Peal	k_Systems :	J1939									
	Scr	en O										8
Fi	ilename	my sceer	n file.scr.xm	Name Sc	reen 0		Mode	Requ	est/Receive_▼	Desired	20	ms
	Addr	Name			Value	Unit		Addr	Name			
۲	00	_ECM_Co	de					00	On_Idle_Sw	itch		
	00	Engine_S	peed			RPM		00	Off_Idle_Sw	itch		
	00	Combust	ion_Control_Pa	th_Owne		None		00	Idle_Validat	ion_State		
	00	Accelerat	tor_Pedal_Posi	tion		%						
	00	Oil_Press	ure			kPa_G		00	T_AIP_Acce	lerator_0	vrd_En	
	00	Intake_M	1anifold_Temp	erature		Deg_C		00	AIP_AccPd_	User_Ovro	Val	
	00	Coolant_	Temperature			Deg_C		00	J39_Acceler	ator_Peda	al_Posi	tion
	00	PrentLoa	dAtCurSpdIndia	ated		%	E F	00	Coolant_Lev	el		
	00	Total_Fu	eling			mg/str						
	00	C_AIP_A	ccelerator_Dea	dband		%	*					
	nn	C ATP A	celerator Hvs	tericic		0/n	-					
D				Event I								
Pro	duct I	I-Selected	E2I	Dat	te .	Description		_				
Pro	duct I	-Actual		10/	20/2000	Enved scree		Caltorn		orn file co	www.	
Co	nfia File		5257022.	10/	20/2011 1	Saveu scree	in me. D. y			ern nie.sc	0×00	
Co	nfig Dat	e/Ver.	14.1.0.16	10/	20/2011 1	Added para	neter Co	olant Le	wel from Devic	e Address	0×00	
Cal	File	1. Total 7. 17 18	Module	10/	20/20111	Added para	neter: Co	olant Le	vel from Devic	e Address	0x00	
Cal	Date/V	er		10/	20/20111		meter: Co	olant Le	vel from Devic	e Address	0x00	
DL	A Firmw	are		10/	20/20111	Added para	neter 12		erator Dedal C	C Address	Dev	ice
DL	A Driver	Version		10/	20/20111	Added para	meter: J3	P Acced	liser Oved V	al from De	vice A	Idee
Bo	otloade	version	-		20/20111	Added paral	neter: Al	ACCFU	_oser_ovru_v		VICE AL	

- Once you have the parameters you want save your screen file by Clicking on the Editor Menu
- Select Save Screen File As...
- Type the name of the screen file and Click the Save Button
- You will see save confirmation in the Event Log



Run Location

ECM Part Number

10/20/2011 1 Added parameter: T_AIP_Accelerator_Ovrd_En from Device Add

10/20/2011 1 Added parameter: Idle_Validation_State from Device Address 0x

10/20/2011 1 Added parameter: Off_Idle_Switch from Device Address 0x00

Add Graphical Monitor Screen



- In addition to the Normal monitor screen with a list of parameter and their values, graphical screens may be used
- To add a graphical screen
 Select the Editor Menu
- Click on Add Screen and Select Graphical Screen
- Graphical Screen will appear
- Add parameter you would like to view as a strip chart graph



Logging Data

FII	e Edit	View	Editor	oggin	g Con	nmand	s Calik	pration	Tools	Help) S	
ogg	ing Mar	nager										
Log	ger P	refix	Update	Rate	Rate (U	ls Unit	PC T	imeStar	mp Acti	ve Fault	s Inact	ive
n 0	So	creen 0	Any Dat	а	1	ms		V		V	_	1 ×
											Ok	1
	111		- 1								5	
_	00	Accele	erator_Pe	edal_F	osition		0.000		%		}	
-	00	Oil_Pr	essure	ы. т.,			619.38		kPa_G		1	
-	00	Intake	e_maniro		mperati	ure	05.017		Deg_C		2	
	00	Coolar	it_remp	eratur	re diante		95.61/	3	Deg_C			
-	00	Prenti	.oadAtCu	rSpai	ndicate	a	0.000		%		ç	
-	00	Total_	Fueling				0.00		mg/str		ź	
-	00	C_AIP	_Acceler	ator_	Deadba	na	12./9/		9/0		2	
-	00	C_AIP	_Acceler	ator_	Hysteris	SIS	1.500		%		Ż	
-	00	C_AIP	_Auto_Z	ero_0	fiset		6.000		9/0		į	
-	00	C_ACL	_lest_C	ell_Au	to_Zer	0	29.301		%		Ş	
_	00	I_Ind	_Auto_Ze	ero_D	Isable		0		None		1	
_	00	C_APH	Highest	C_ACC	elerator		36.000		%		***	
-	00	C_AIP	_Acceler	ator_	Range		68.500	,	%		-	
-											1	
*									i i i		}	
								82			ļ	
Pro	oduct Ir	ntormation	Addr	00		-	vent Log)			~	
Pro	duct_1	d-Selecte	a E.	21		- 112	Descript	ion			ł	
PTC	nuuct_l		E	21	2.01	F. A	dded p	arame	ter: Eng	ine_Spe	eed fro	
CO	ning File	to Mar	5.	4104	2.01.00	9 4	dded p	arame	ter: J39	_Accele	rator {	
0	ing Dat	le/ver.	14	+.1.0.1	.0	4	dded p	arame	ter: AIP	_AccPd	User	
Cd	rile		M	ouule		- 4	dded p	arame	ter: T_A	IP_Acc	elerat	

- Before starting to log data, set the data logger configuration
- Click the Logging Menu and Select Configure Data Logger
- Logging Manager window will appear
- Check PC TimeStamp, Active and Inactive Faults to capture PC time and fault data. Click Ok
- The actual logging rate is displayed in the corner and the desired speed can also be set in the monitor window
- The more parameters you have the slower the maximum logging rate will be



Logging Data

- To start logging data, Press the Start Button
- You will see the indication that logger has been started

< Cummin	ns Calterm III			of Asses	And Designation	-	Propher line						- 0 - X
File Edit	View Editor Logging Command	s Calibration Tools He	lp	- 1									
Save Stor	Configure IDL Start IDL Ca	ancel IDL Reconnect ECM	Reset D	atalink									
RP12	210a : J1939												4 Þ ×
- Scro	an 1												d b x
J	(seperal								St				
Filename	Parameters.scr.xml Name Sc	reen 1					Mode	Request/Receive 💌	Desired	20	ms 💌		151
Addr	Name	Value	Unit	Comment	<u> </u>	Addr	Name	Value	Unit	Comm			<u> </u>
▶ 00	Engine_Speed	0.0	RPM	Engine speed		• 00	Total_Fueling	0.00	mg/sti	Desire			
00	_Fueling_Control_State	_FUELING_STOP_STATE		Indicates to t		00	Final_liming	6.69	deg_B	[IVC]			
00	Combustion_Control_Path_Owner	26	None	Indicates the		00	Ambient_Air_Press	47.66	kPa	Value			
00	PrentLoadAtCurSpd	1.050	%	The line of th		00	Battery_voltage	25.64	V Dan C	T nis pa			
- 00	React Processo	-1.039	Leg_C	Concernation of		00	H CRD Chi Valua	24.000	Nono	Coolor			
00	Coolont Tomporature	72.34 99.021	KPa_G	Gage value of		00	n_CDK_CIII_Value	1.000 E700.0	None	Altitud			
00	APC bp Cmd	1200.0	bar			00	ARC & ImaDosition	3700.0	None	Indicat			
00	APC_hp_chlu	1200.0	bar	Accumulator		00	Maintenance Fault Lamo	0	None	Status			
00	Accelerator Pedal Position	0.000	9/6	Provides a me		00	Ston Fault Lamp	1	None	Status			
00	Vehicle Speed	0.00	km/hr	This paramete		00	Filtered Gear Ratio	16.00000	None	First-o			
00	Net Engine Torque	-203.000	N m	Actual engine		00	GHC State	GHC SETUP		This pa			
00	Oil Pressure	482.66	kPa G	The linearized		00	V AIM trc SCR In	220.1	Dea C	ATMa			
00	Engn Control Path Owner	58	None	This value indi		00	V AIM trc SCR Out	235.2	Deg C	ATM a			
00	Charge Flow	0.000	ka/mi	Charge Flow		00	V AIM pc Urea TankLvl	57.62	%	Indicat			
00	CBP Combustion Torque	-203	Nm	Engine Torque		00	V SCP fgh UreaDosingRat	e 0.0	a/hr	Urea s			
00	Engine Warmup Prot Active	1	None	Status flag in		00	V SCM ppm SCR Out NO	x 0	ppm	SCR ou			
00	FIW State	0	None	Indicates to t		00	Urea Tank Level Sensor	Volta 2.375	v	Urea t			
_						00	_ECM_Code	X0325L.00		Data p			
*					-	00	_Urea_Tank_Level_Sensor	Linear 57.62162	%	This is			-
ProductInf	formation Addr 00 -	vent Log										Faults	
Product Id	-Selected BBX	Date	_			_			_			00:0132	00:2771
Product Id	d-Actual BBX) 25/05/2011 13:44	Estimat	ed time before ti	ne media dete	full for logo	er Screen 1 is : 365 dave 16 h	ours 20 minutes 52 s	econde			00:0319	00:2973
Config File	Core_II_ICD.ec	25/05/2011 13:44	Logger	Screen 1 started	ie media gets		er 50/een 1 is . 505 days 10 n	ours 25 minutes 52	seconds			00:0418	
Config Date	e/Ver. 8.3.1.3	25/05/2011 13:44	Attemn	ting to start the	ogger Screen	1						00:1117	
Cal File	Module	25/05/2011 13:41	Added r	arameter: Urea	Tank Level	Sensor Lin	earized Value from Device A	ddress 0x00				00:1241	
Cal Date/V	/er 8.3.1.3	25/05/2011 13:41	Added	arameter: ECM	Code from D	evice Addre	ss 0x00					00:1711	
DLA Firmwa	are 5.45 🗸	25/05/2011 13:41	Added	arameter: Urea	Tank Level	Sensor Vo	Itage from Device Address 0x	00				00:2311	
•	• T k	25/05/2011 13:41	Added r	arameter: V SC	M nom CCD	t NOx fr	om Device Address 0x00				-	<	•
🖨 F10 - Fu	unction key list		1	ldle 🔴	Logging: ON				E	Event #: 0		2 📻 00:F	RP1210a:J1939
		8 🔺 🤇								E	م ا	🗊 .ad 🌘	13:45 25/05/2011
45	4/12/2013		Сц	mmins (Confide	ential							



Logging Data

- To Stop logging data, Press the Stop Button
- Save As window will appear click Save to save data log

Cummins 🗠	Calterm III			of Sec.								_ 0 <u>×</u>
File Edit	view Litor Logging Commands	s Calibration Tools He	lp									
Save Stop	Stop Configure IDL Start IDL Ca	ncel IDL Reconnect ECM	Reset Da	atalink								
RP12	10a : J1939											4 Þ ×
-												4
Scree												4 1 2
Filename	General Parameters.scr.xml Name Sci	reen 1					Mode Request	t/Receive 💌	Desired	20 n	ns 🔻	151
Addr	Name	Value	Unit	Comment		Addr	Name	Value	Unit	Comm		•
▶ 00	Engine_Speed	0.0	RPM	Engine speed		▶ 00	Total_Fueling	0.00	mg/str	Desire		
00	_Fueling_Control_State	_FUELING_STOP_STATE		Indicates to t		00	Final_Timing	6.69	deg_B	[TVC]		
00	Combustion_Control_Path_Owner	26	None	Indicates the		00	Ambient_Air_Press	47.66	kPa	Value		
00	PrentLoadAtCurSpd	0.000	%	The ratio of th		00	Battery_Voltage	25.64	v	This pa		
00	Intake_Manifold_Temperature	-1.859	Deg_C	The linearized		00	InternalTmptr	24.688	Deg_C	Intern		
00	Boost_Pressure	72.34	kPa_G	Gage value of		00	H_CBR_Chi_Value	1.000	None	Scaler		
00	Coolant_Temperature	88.031	Deg_C	The linearized		00	Altitude	5700.0	m	Altitud		
00	APC_hp_Cmd	1200.0	bar	Accum press c		00	APC_s_ImaPosition	1	None	Indicat		
00	APC_hp_Fdbk	1200.0	bar	Accumulator		00	Maintenance_Fault_Lamp	0	None	Status		
00	Accelerator_Pedal_Position	0.000	%	Provides a me		00	Stop_Fault_Lamp	1	None	Status		
00	Vehicle_Speed	0.00	km/hr	This paramete		00	Filtered_Gear_Ratio	16.00000	None	First-o		
00	Net_Engine_Torque	-203.000	N_m	Actual engine		00	GHC_State	GHC_SETUP	•	This pa		
00	Oil_Pressure	482.66	kPa_G	The linearized		00	V_AIM_trc_SCR_In	220.1	Deg_C	ATM a		
00	Engn_Control_Path_Owner	58	None	This value indi		00	V_AIM_trc_SCR_Out	235.2	Deg_C	ATM a		
00	Charge_Flow	0.000	kg/mi	Charge_Flow		00	V_AIM_pc_Urea_TankLvl	57.62	%	Indicat		
00	CBP_Combustion_Torque	-203	N_m	Engine Torque		00	V_SCP_fgh_UreaDosingRate	0.0	g/hr	Urea s		
00	Engine_Warmup_Prot_Active	1	None	Status flag in		00	V_SCM_ppm_SCR_Out_NOx	0	ppm	SCR ou		
00	FIW_State	0	None	Indicates to t		00	_Urea_Tank_Level_Sensor_Volta	2.375	v	Urea t		
						00	_ECM_Code	X0325L.00		Data pl		
*					-	00	_Urea_Tank_Level_Sensor_Linear	57.62162	%	This is		-
Product Info	ormation Addr 00 🖵 E	vent Log									Faults	
Product_Id-	Selected BBX	Date	Descript	ion							▲ 00:0132	00:2771
Product_Id-	Actual BBX	25/05/2011 13:44	Estimate	ed time before th	e media gets	full for logg	er Screen 1 is : 365 days 16 hours 29	minutes 52	seconds		00:0319	00:2973
Config File	Core_II_ICD.ect	25/05/2011 13:44	Logger S	creen 1 started.	-		•				00:0451	
Config Date	/Ver. 8.3.1.3	25/05/2011 13:44	Attempt	ing to start the L	oaaer Screen	1.					00:1117	
Cal File	Module	25/05/2011 13:41	Added p	arameter: Urea	Tank Level	Sensor Lin	earized Value from Device Address (0x00			00:1241	
Cal Date/Ve	r 8.3.1.3	25/05/2011 13:41	Added p	arameter: ECM	Code from De	vice Addre	ss 0x00				00:1/11	
DLA Firmwa	re 5.45 🗸	25/05/2011 13:41	Added p	arameter: Urea	Tank Level	Sensor Vo	Itage from Device Address 0x00				00:2311	
4		25/05/2011 13:41	Added p	arameter: V SCM	DDM SCR C	out NOx fr	om Device Address 0x00				▼ < _ □	T
🔐 F10 - Fun	iction key list		Ø 🛛	ldle 😑 L	ogging: ON				E	event #: 0	0 2 0	0:RP1210a:J1939
B	🥭 🚞 🔞 🛽	e 🔺 🤁							. •	EN	- 🗎 atl 🌾	13:45 25/05/2011



Monitoring and Logging - Summary

When monitoring and logging ECM data, remember to:

- Use a predefined screen file if available to ensure all required parameters are selected
- Add new parameters if needed and save the screen file for future use
- Use graphical monitor screen to view fast changing parameters, e.g. Engine Speed
- Select fault logging option before starting logging data
- Use good file naming convention when saving data logs





- Tool Installation and Registration
- Connecting to an Engine
- Monitoring and Logging
- Changing Calibrations and Overrides



In this section we will discuss how to

- Identify different calibration types
- ensure ECM is correct mode to make changes
- Temporarily change calibrations
- Manage calibration changes
- Use parameter overrides



Changing Calibrations

C AIP Accelerator Deadband

- Engineer often needs to temporarily change ECM calibrations while performing different tests, e.g. engine protection testing, troubleshooting etc.
- Calibrations can be a single value, a 2D array or a 3D array

C_1	IDOI_FF_	Gain_1 Di	C_NDOT_	Int_Gain_I	DI	272					
	None	None	X/Y	500.0	700.0	1200.0	1700.0	2142.0	2152.0	2192.0	2202.0
•	0.000	0.203	0.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	1.000	0.203	1.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	2.000	0.203	2.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	3.000	0.203	3.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	4.000	0.203	4.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	8.000	0.203	8.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	16.000	0.203	16.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
	32.000	0.203	32.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797

12.797

 In addition, there are special calibrations called overrides that allow users to override sensor values, i.e. temperatures, throttle percentage etc.





Requesting ChangeLock

Cumm	ins Calterm III					
File Edit	View Editor Logging Command	ls Calibratio	n Tools	Help		
Stop Star	t Configure IDL Start IDL Cancel ID	Reconnec	t ECM Re	et Datalink		
Peal	_Systems : J1939					
Scre	en 0 C_NDOT_FF_Gain_Tbl					
Filename	my sceern file.scr.xml Name So	creen 0				Mode
Addr	Name	Value	Unit	×	Addr	Name
00	_ECM_Code	Z90869.04			00	T_ACD_Acctr_Type_Selec
00	Engine_Speed	0.0	RPM		00	Accel_Position_Sensor_V
00	Combustion_Control_Path_Owne	26	None			
00	Accelerator_Pedal_Position	0.000	%		00	Primary_Accel_Ped_Pos
00	Oil_Pressure	619.31	kPa_G		00	Accelerator_Auto_Zero
00	Intake_Manifold_Temperature	68.094	Deg_C		00	Filtered_Raw_Accel_Valu
00	Coolant_Temperature	95.617	Deg_C		00	Accel_Before_Error_Proc
00	PrentLoadAtCurSpdIndicated	0.000	%			
00	Total_Fueling	0.00	mg/str		00	On_Idle_Switch
00	C_AIP_Accelerator_Deadband	12.797	%		00	Off_Idle_Switch
00	C_AIP_Accelerator_Hysterisis	1.500	%		00	Idle_Validation_State
00	C_AIP_Auto_Zero_Offset	6.000	%			
00	C_ACD_Test_Cell_Auto_Zero	29.301	%		00	T_AIP_Accelerator_Ovrd
00	T_Ind_Auto_Zero_Disable	0	None		00	AIP_AccPd_User_Ovrd_V
00	C_APP_Highest_Accelerator_Min	36.000	%		00	J39_Accelerator_Pedal_H
00	C AIP Accelerator Range	68.500	%	*	00	Coolant Level

- Before you can make changes, you need to check if the ECM is in a correct mode to make changes
- From Commands Menu Select Request ChangeLock
- You will see a confirmation in the status bar and the Event Log

Product Information	Addr 00 🔻	Event Log	
Product_Id-Selected	E2I	Date	Description
Product_Id-Actual	E2I	10/24/2011 4:14 PM	Command RequestChangeLock executed successfully on device address 0x00
Config File	5257022.ec	10/24/2011 4:07 PM	Command ReleaseChangeLock executed successfully on device address 0x00
Config Date/Ver.	14.1.0.16	10/24/2011 2:31 PM	Cannot monitor C NDOT FF Gain Tbl[0] at 0x00 because address is 0.
Cal File	Module	10/24/2011 2:31 PM	IDL is in idle state.
Cal Date/Ver	14.1.0.16	() 10/24/2011 2:31 PM	IDL is in cleaningup state.
DLA Firmware	4.4	10/24/2011 2:31 PM	Unable to retrieve information from the module at device address 0x00.
DLA Driver Version	2.49.8-45	0 10/24/2011 2:31 PM	Added parameter: C NDOT FF Gain Tbl[0] from Device Address 0x00
BootLoader Version	4.7.1.2	10/24/2011 2:31 PM	Added parameter: C LSI Pos Err Low Thd from Device Address 0x00
Run Location	Application	10/24/2011 2:31 PM	Added parameter: C LSI Pos Err High Thd from Device Address 0x00
ECM Part Number	4921776 🚽	() 10/24/2011 2:31 PM	Added parameter: Coolant Level from Device Address 0x00
•		() 10/24/2011 2:31 PM	Added paranger: J39_Accelerator_Pedal_Position from Device Address 0x00
F10 - Function key list			Dalle Logging: OFF



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Cummins Confidential

Changing Calibrations

- To change calibrations, add the parameters you would like to change
- Type in a new value and Press Enter
- The new value will be displayed and highlighted in yellow
- The calibrations will revert to their original values either when the tool is disconnected or on the next key on

File E	dit Viev	/ Monitor Logging Commands Calibr	ation Tools I	telp					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Save	Stop	Start Configure IDL Start IDL Cand	eliDL Recor	The ct ECM	Reset [Datalink			
Filena	me Sci	reenscr.xml Name Scree	n 0	Ma	ode R	equest/R	eceive Desired 20 ms	-	
	Addr	Name	Value	Unit		Addr	Name	Value	Unit
	00	Engine_Speed	0.0	RPM		00	H_LSI_BaseGainHigh	24.000	1/sec
	00	Boost_Pressure	15.81	kPa_G		00	C_LSI_Pos_Err_Low_Thd	20.0	RPM
	00	_Fueling_Control_State	_FUELING_		•	00	C_LSI_Pos_Err_High_Thd	50.0	RPM
	00	Combustion_Control_Path_Owne	26	None					
	00	Final_Timing	6.00	deg_B					
	00	Total_Fueling	0.00	mg/str					
	00	Coolant_Temperature	24.820	Deg_C		1			
1	00	Intake_Manifold_Temperature	-11.375	Deg_C					
•	00	Net_Engine_Torque	-87.000	N_m	*	_			

Manage Calibration Changes and Faults

There are a few more functions you can perform

省 Cummins Calterm 🎞	
File Edit View Editor Logging [Commands Calibration Tools Help
Stop Start Configure IDL Start IDL	Request ChangeLockF7Release ChangeLockF7
Peak_Systems : J1939	Hold Changes
Screen 0 C_NDOT_FF_Gai	Cancel Changes
Filename my sceern file.scr.xml Addr Name	Display ChangeLock Owner Display Client Device Path
00 _ECM_Code 00 Engine_Speed 00 Combustion_Control_P	Erase Active Faults Erase Inactive Faults Erase All Faults
	Start Broadcast Stop Broadcast
	Reconnect ECM Reset Datalink F12

- In the Command Menu:
 - Hold changes will tell the ECM to keep calibration changes in Flash until key off
 - Cancel changes will tell the ECM to revert back to the original values
 - Erase Active/Inactive/All Faults will erase corresponding engine faults



Using Overrides

- Sometimes it may be desirable to override an ECM parameter like a switch state and a sensor value
- Each override typically has two calibrations associated with it:
 - Override Enable calibration turns the override functionality for a specific sensor
 - Override Value calibration the override value that the ECM will use
- It is a good idea to set the override value to a current value before enabling override to avoid unwanted behaviour



Using Overrides

In this example, it is desired to override throttle to 20%

	Addr	Name	Value	Unit	Comm
	00	Accelerator_Pedal_Position	0.000	%	Provid
	00	T_AIP_Accelerator_Ovrd_En	0	None	When
	00	AIP_AccPd_User_Ovrd_Val	0.000	%	Overri
•	00	Engine_Speed	754.8	RPM	Engine
					Ś

~	Addr	Name	Value	Unit	Comm
	00	Accelerator_Pedal_Position	(0.000)	%	Provid
	00	T_AIP_Accelerator_Ovrd_En	0	None	When
	00	AIP_AccPd_User_Ovrd_Val	0.000	%	Overri
•	00	Engine_Speed	754.8	RPM	Engine
					1

Addr	Name	Value	Unit	Comn
00	Accelerator_Pedal_Position	20.000	%	Provid
00	T_AIP_Accelerator_Ovrd_En	1	None	When
00	AIP_AccPd_User_Ovrd_Val	20.000	%	Overri
00	Engine_Speed	1091.5	RPM	Engine

- The override is initially disabled, the ECM is using the Sensed Parameter as its input.
- Make sure the override value is equal to the current value. Then enable override and change the value to 20
- The value of the Accelerator_Pedal_Position will change to 20% and engine speed will increase



Using Overrides

Here is a list of common overrides:

Parameter	Override	User Value	
Accelerator_Pedal_Position	T_AIP_Accelerator_Ovrd_En	AIP_AccPd_User_Ovrd_Val	
Alternate_Idle_Switch	T_DIP_Alternate_Idle_Ovrd_En	DIP_Alternate_Idle_Ovrd_Val	
Ambient_Air_Press	T_AIP_AMB_User_Override_En	AIP_AirPress_Override_Value	
OEM_Temperature	T_AIP_OEMTmptr_Ovrd_En	AIP_OEMTmptr_Ovrd_Val	
Torque_Curve_Selection_Switch	T_AIP_SAT_Switch_Ovrd_En	AIP_SAT_Switch_Ovrd_Val	
CC_OnSwitch	T_DIP_CC_OnUserOvrdEn	DIP_CC_OnUserOvrdVal	
Coolant_Temperature	T_AIP_CT_User_Override	AIP_Cool_Tmptr_Override_Value	
Manual_Fan_Input	T_DIP_Manual_Fan_User_Ovrd_En	DIP_Manual_Fan_User_Ovrd_Val	
PTO_1_Switch	T_DIP_PTO_1_Ovrd_En	DIP_PTO_1_Ovrd_Val	
PTO_2_Switch	T_DIP_PTO_2_Ovrd_En	DIP_PTO_2_Ovrd_Val	
PTO_3_Switch	T_DIP_PTO_3_Ovrd_En	DIP_PTO_3_Ovrd_Val	
PTO_Decrement_Switch	T_DIP_PTO_Decrt_Ovrd_En	DIP_PTO_Decrt_Ovrd_Va	
PTO_Increment_Switch	T_DIP_PTO_Incrt_Ovrd_En	DIP_PTO_Incrt_Ovrd_Val	
Remote_APP_Switch	T_DIP_RMT_APP_SW_User_Ovrd_En	DIP_RMT_Switch_User_Ovrd_Val	
Oil_Pressure	T_AIP_OP_User_Override	AIP_Oil_Press_Override_Value	
Oil_Temperature	T_AIP_OT_User_Override	AIP_Oil_Tmptr_Override_Value	
Remote_Accelerator	T_AIP_Remote_Ovrd_En	AIP_Remote_User_Ovrd_Val	



Changing Calibrations - Summary

When changing ECM calibrations, remember to:

- Make sure the Request Change Lock or Run From Development is set
- Change both override calibrations, the override value and the enable
- Set override value equal to current value before enabling the override
- Cycle ignition key to revert to the original calibrations values





How to get help

Refer to Calterm III WIKI Page

http://www.ctg.cummins.com:8005/display/Calterm/Calterm

- Contact Tools group
 - By sending you questions to <u>calterm@cummins.com</u>
- Contact your EFE Leader
 - For problems with your Calterm III license or approval contact the EFE Leader that you selected on your request form
- Factory AE's may attend additional training offered at Cummins Tech Center by Logos, Ltd



QUESTIONS?



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